REMARKS/ARGUMENTS

Claims 24-43 stand in the present application. Applicants note with appreciation the Examiner's indication of allowable subject matter in claims 29 and 35, but respectfully submit that in view of the above amendments and the following remarks that all of claims 24-43 are in condition for allowance. Concurrently with this Amendment Applicants have filed an "Applicant Initiated Interview Request Form."

In the Office Action, the Examiner has rejected claims 24-30 and 36-39 under 35 U.S.C. § 101 for merely claiming a mathematical algorithm. As noted above, independent claims 24 and 25 have been amended to more clearly require an output element of sending the information together with the minimized expression. Accordingly, the Examiner's § 101 rejection of the claims is believed to have been overcome.

The Examiner has rejected claim 32 under 35 U.S.C. § 112, second paragraph, as having insufficient antecedent basis for the term "the size." As noted above, Applicants have amended claim 32 in order to correct this deficiency and accordingly, the Examiner's § 112, second paragraph, rejection of the claims is believed to have been overcome.

The Examiner has also rejected claims 24-27, 30-31 and 36-43 as being unpatentable under 35 U.S.C. § 103(a) over Golestani in view of Wesley. Applicants respectfully traverse the Examiner's § 103 rejection of these claims.

Applicants' invention is directed towards a more efficient multicast communication technique. As stated at pages 1-2 of the present specification, it is common place for the receivers of a multicast system to send some form of feedback

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message to the transmitter of the multicast system. This can be in the form of an acknowledgement (ACK) when a packet is received or a negative acknowledgement (NACK) when a packet is not received within an expected time frame. Given that, for example, with a TV multicast, there may be thousands to millions of receivers then it is readily apparent that the generation of thousands (or millions) of ACKs (or NACKs) will both congest the transmission network and require significant resource from the transmitter to receive and process all of the feedback messages.

Therefore, it is well known that a method that will reduce the number of feedback messages will make for a more efficient multicasting technique. One approach to this problem is to provide all receivers with a timer – the receiver will not send a NACK (this approach is not used with ACKs) until the timer expires. If the receiver detects that another receiver has sent a NACK then it will not send a NACK, regardless of the status of the timer.

Such approaches, and their shortcomings, are discussed in greater detail in the present specification at pages 2-3. For example, one shortcoming of the timer-based method is a trade-off between the latency of multicast data delivery and the amount of NACK suppression which means that the timer-based method is not suitable for use in applications such as multimedia applications that require high scalability (i.e., large numbers of users yet generating low levels of NACKs) and low latency. Applicants' invention provides an improved timer-based method in which the selected functions/algorithms allow a network designer to control the additional latency that is caused by the suppression of the NACKs.

Golestani discloses a method of feedback suppression for use with multicasting that unlike Applicants' claimed inventions does not involve a timer-based method nor any technique that may improve known timer-based methods to address latency issues. Golestani discloses the structuring of the receivers into a hierarchy for the purpose of generating feedback messages. See Golestani at Figure 2; and column 4 lines 24-55. In Golestani, the feedback messages generated by receivers 300-k and 300-l will be consolidated by receiver 300-j before being fed to the source 100. Similarly, any receivers in the receiver hierarchy that are below receivers 300-k and 300-l will be consolidated by those receivers prior to the delivery of the feedback messages to the receiver 300-j. Accordingly, Golestani addresses a different technical problem to that addressed and solved by Applicants' invention.

The Examiner admits that Golestani does not teach "expected extra latency for [sic, of] the feedback due to the timer function." See Office Action at page 2. In fact, the Examiner tacitly admits that the entire body of claim 24 is not taught by Golestani.

> . . . finding the one or more parameter values which minimize an expression defined as a function of the parameters, the expression comprising at least two terms, where one term relates to the expected number of feedback messages generated by receivers in the multicast system and the second term relates to the <u>expected extra latency of the feedback due to the timer function</u>.

See claim 24 (emphasis supplied). More particularly, by admitting that the underlined portion of claim 24 is not taught by Golestani, the Examiner tacitly admits that the entire limitation is not taught by Golestani in that the last two lines of the limitation cannot be parsed out from the rest of the limitation. Thus, Golestani is simply not relevant to Applicants' invention.

Moreover, Wesley does not solve the deficiency of Golestani in that it merely relates to an extended User Datagram Protocol (referred to as UDPe). See Wesley at column 7, line 48 to column 9. UDPe is an alternative to TCP which is preferred for some applications as it has lower overheads than those associated with TCP. It does not guarantee reliable packet delivery or that packets will arrive in the correct sequence – UDPe datagrams may arrive in the wrong sequence, be duplicated, or may not arrive at all. It is difficult to reconcile such an expanded protocol with a system in which feedback messages are sent.

Moreover, even if Wesley were to be interpreted in the manner suggested by the Examiner, it does not address the fundamental flaws in the Examiner's analysis of Golestani. Golestani does not disclose a timer function for delaying feedback in a multicast system and, therefore, Golestani teaches away from the use of timer functions. As noted above, Golestani discloses a hierarchical ordering of receivers for the consolidation of feedback messages. Given that Wesley is not specifically concerned with multicasting, there is no reason or suggestion in either disclosure that would lead one of ordinary skill in the art to ignore the explicit disclosure of Golestani and to incorporate a timer function in place of the hierarchical ordering.

The Examiner has also rejected claims 28, 32 and 33-34 under 35 U.S.C. § 103(a) as being unpatentable over Golestani in view of Wesley and further in view of any one of the secondary references, Matthews et al., Kodialam et al. or Zhao et al. Applicants respectfully traverse the Examiner's § 103 rejections of these claims.

It should be clear that the secondary references do not solve the deficiencies noted above with respect to Golestani and Wesley. More particularly, the Examiner has

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merely cited Matthews et al. for disclosing a monotonic function, Kodialam et al. for

disclosing the size of the group as receivers, and Zhao et al. for disclosing the use of a

lookup table. Thus, these references do not solve the deficiencies noted above with

respect to Golestani and Wesley and therefore these claims patentably define over the

cited references taken either singly or in any combination.

Therefore, in view of the above amendments and remarks, it is respectfully

requested that the application be reconsidered and that all of claims 24-43, standing in

the application, be allowed and that the case be passed to issue. If there are any other

issues remaining which the Examiner believes could be resolved through either a

supplemental response or an Examiner's amendment, the Examiner is respectfully

requested to contact the undersigned at the local telephone exchange indicated below.

Respectfully submitted,

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